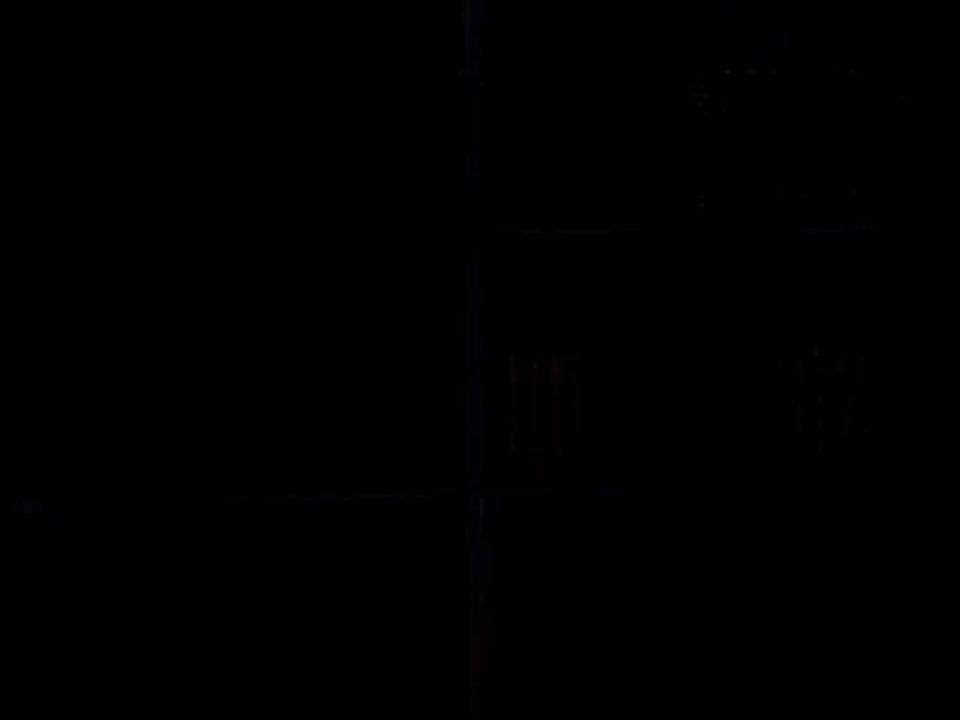




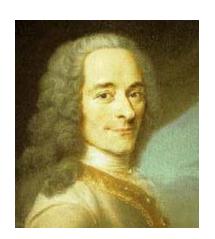
Objective

- To understand the ideas behind the Age of Enlightenment and their roots in the Renaissance and the Scientific Revolution
- To understand how those ideas affected politics and society by empowering the individual and society at the expense of kings.
- To see the connection between the Enlightenment ideals and the present.





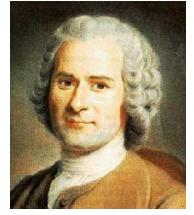
Intellectual Movement



Voltaire



Locke



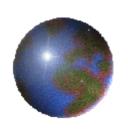
Rousseau



Diderot

- During the 18th century, certain thinkers and writers, primarily in London and Paris, believed that they were more enlightened than their compatriots.
- Intellectuals called philosophes set about engineering a new society rooted in reason that would empower individuals and help humans reach their fullest potential in the quest for truth
- Philosophes used the methods of science to engineer a better existence for man and a deeper understanding of the human condition!





The Scientific Revolution

Key Concepts



Legacy from the Ancients was Wrong!



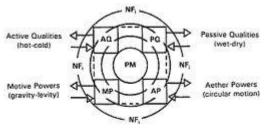
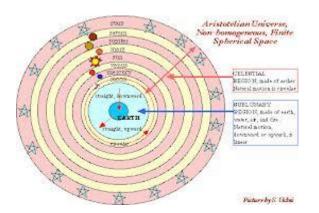


Fig. 3.3 Aristotle's Powers Model of an Inorganic Nature

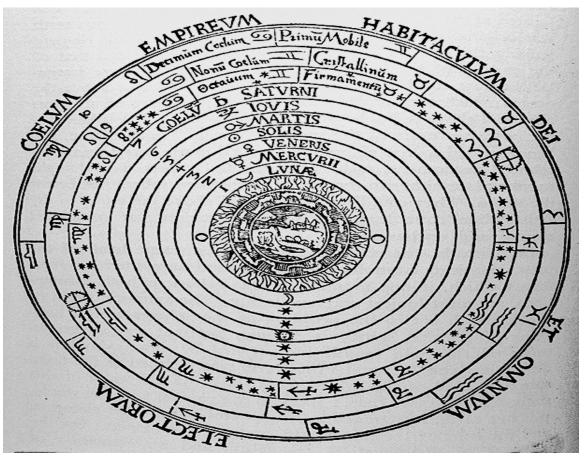


- Derived from Ptolemy, Aristotle, and Plato, places man and Earth at the center of the Universe
- Classical teachings represented the accepted knowledge of scholars for over 1,000 years!
- Classical Writings were "Christianized" to reflect Christian dogma, thus Aristotelian and Ptolemaic models dominated
- Aristotelian elements-earth, fire, water air, Platonian elements-form & matter.
- Earth = Living, Protected Sphere
- Geocentric view(Ptolemaic)=everything revolves around the Earth!
- Early Scientists discover the wisdom of the ancients was wrong!

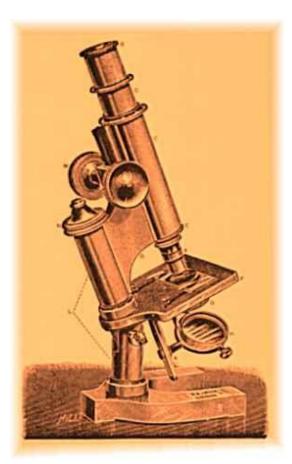


Aristotelian-Ptolemaic Model: The Geocentric Paradigm

Below is an image of the universe as conceived of by Aristotle and Ptolemy. The earth is composed of four elements: Earth, Water, Fire and Air. It is in the center (notice the trees, mountains and water). In this cosmology, the earth does not revolve around anything else or rotate around its own axis. It is surrounded by ten concentric spheres made of a perfectly transparent substance known as "quintessence." These spheres revolve around the earth, carrying the other celestial bodies. As you can see, one is the sphere "of the Moon" ("Lunae"), two is Mercury ("Mercurii"), three is Venus ("Veneris"), four is the Sun ("Solis"), five is Mars ("Martis"), six is Jupiter ("Iovis"), seven is Saturn ("Saturni"), and spheres eight, nine and ten hold the "fixed stars" (so-called because they do not move relative to each other, unlike the planets, which move among the other stars). (The symbols by the names of the planets are the traditional astrological symbols for them. The symbols in spheres eight, nine and ten are for the twelve astrological constellations, Gemini, Ares, etc.) Beyond the tenth sphere is, as the words in the periphery say in Latin, "The Kingdom of Heaven, the Abode of God and of the Elect."



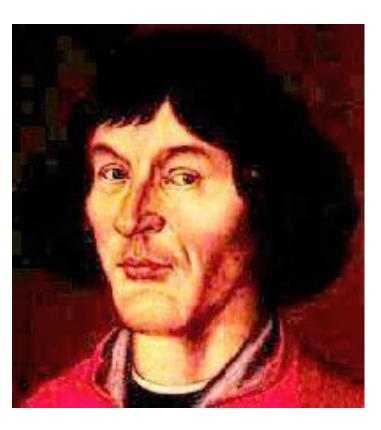
Causes of the Scientific Revolution



- Medieval Intellectual Life and Medieval Universitiesstimulated interest in knowledge
- The Italian Renaissance and the influence of Humanism led to challenging accepted doctrines and testing conclusions
- Renewed emphasis on mathematics
- Renaissance system of patronage paid for scholarly chairs at universities and the research of early scientists
- Navigational problems of long sea voyages during the Age of Exploration led to development of new precision scientific instruments and an increase in scientific knowledge that was put to a practical use
- Better scientific instruments for further exploration telescope, microscope
- Desire to know the universe as it is, to be able to prove knowledge and not rely on faith for answers.
- Early scientific discoveries led to a new attitude of confidence and feeling of power and control over the natural world, as man learned to understand, harness and redirect the forces of nature for his own purposes!



Copernicus (1473-1543)

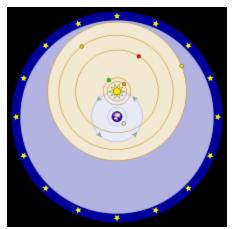


- Polish Astronomer who aimed to glorify God
- Proposed heliocentric model: Sun-centered universe
- Challenged circular orbits
- Universe of staggering size
- Earth no different than any other planet
- On the Revolutions of the Heavenly Spheres (1543)

Tycho Brahe (1546-1601)



- Most sophisticated observatory of his day on the island of Hven
- Arrogant nobleman who became a royal astronomer to King of Denmark
- Remained an Aristotelian to his death—did not agree with the heliocentrism of Copernicus



- Discovered comet shooting right through crystalline spheres; the universe is constantly changing!
- Father of observational astronomy

Francis Bacon (1561-1626)



- Father of the Scientific Revolution
- Invented The Scientific Method, using inductive reasoning to arrive at conclusions
- Emphasis on practical, useful knowledge for the benefit of mankind
- New attitude toward nature that assumes that everything is knowable and discoverable!





Johannes Kepler (1571-1630)



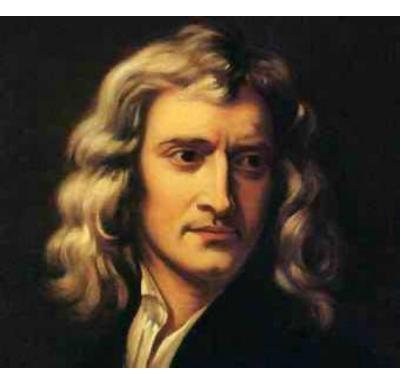
- Student of Brahe
- Discovered Laws of Planetary Motion
- Planetary motion conforms to mathematical formula
- Elliptical orbits for the planets
- Planets do not move at uniform speeds in their orbits

Galileo Galilei (1564-1642)



- Early practitioner of the experimental method
- Mathematical formula for acceleration of falling objects
- Relativity—physical laws are the same in every system
- His discoveries using the telescope were the first of their kind; was the first to use a refracting telescope
- Challenges categories of "form" and "matter" from classical philosophy
- Galileo was forced to recant by the Catholic Church, but he was proven right!

Isaac Newton (1642-1727)



calculating



- Newton far from the perfect rationalist, he was religious!
- A great synthesizer of data
- Blended inductive and deductive methods to arrive at conclusions
- Argues for a universe governed by natural laws; sought a unified theory for the universe
- Invented calculus and discovered Law of Universal gravitation
- * Principia; Mathematical Principles of Natural Philosophy (1687)





Rene Descartes (1596-1650)



- Significance of Doubt
- Great proponent of rationalism and critical analysis of information; Father of Modern Rationalism
- The Deductive Method
- Spatial relationships can be expressed in mathematical formulas
- Father of Analytical Geometry
- *"I Think, therefore I Am" expressed the individuality of the rational man.



Andreas Vesalius & William Harvey



Andreas Vesalius, a Flemish physician wrote "On the Fabric of the Human Body" (1543)— anatomy based on scientific dissection of cadavers. He was the Father of Modern Anatomy

William Harvey was an English physician who wrote "On the Motion of the Heart and Blood" (1628)—proved the heart was the start point for circulation and that the same blood flowed through veins and arteries, proving that blood made a complete circuit around the body.



Consequences of the Scientific

Revolution

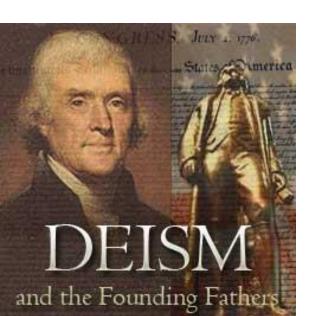


- Rise of the "Scientific Community"
 - --Royal Society of London (1662)
 - --Academy of Royal Sciences (1666)
- The modern scientific method
- A universe ordered according to natural laws that could be discovered and understood
- The assumption that all is knowable and that man is the master of what he learns!
- Man can know the mind of God



Consequences of the Scientific

Revolution (cont)



- Laws discovered by human reason—empowers man at the expense of organized religion.
- "De-Spiritualized" and de-mystified the Universe leads to secularism!
- John Locke's New Psychology
 - -- Essay Concerning Human Understanding (1690)
 - -- "Tabula Rasa"—blank slate; human minds!
- Mechanical View of the Universe; it runs according to knowable, understandable natural laws without the aid of a supernatural being.
- US Founding Fathers were Deists, not doctrinaire Christians—USA founded on reason and enlightenment!
- Deistic View of God
 - --God sets the machine of the universe in motion and then vacates, leaving it to run automatically.





Renaissance Humanism led to the Enlightenment!

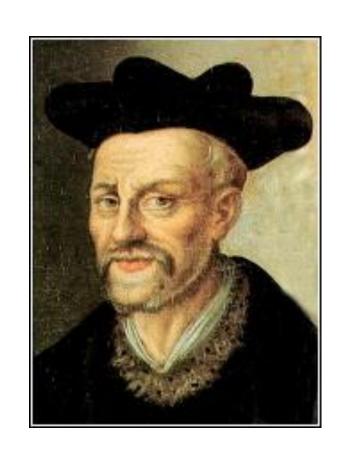
- In the 14th and 15th centuries, "humanists" celebrated the human race and its capacities.
- They argued they were worshipping God more appropriately than the priests and monks who harped on original sin and asked people to humble themselves.

Some of them claimed that humans were like God, created not only in his image, but with a share of his creative power. The painter, the architect, the musician, and the scholar, by exercising their intellectual powers, were fulfilling divine purposes.



Humanists Challenged Church Authority

- In the 16th century, various humanists had begun to ask dangerous questions.
- François Rabelais, a French monk and physician influenced by Protestantism, challenged the Church's authority, ridiculing many religious doctrines as absurd.
- The Protestant Reformation split the church in part over doctrinal issues!

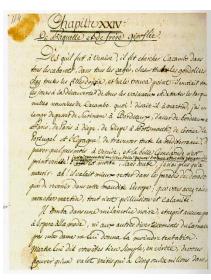




Enlightenment Rooted in Science & Reason

- 1500-1700: European scientists using reason to discover laws of nature
 - Very successful: Planetary movements, chemistry, vaccine for smallpox, etc.
- Early 1700's: If people used reason to find laws that governed the physical world, why not use reason to discover natural laws?

- Laws that govern human nature
- Reformers begin studying human nature and societal problems to find rational solutions!
- Enlightenment celebrated the reason of the ancients in improving the present, back to the future!
- Enlightenment empowered the individual and the right of the people to determine their destiny.
- These thinkers believed that human reason could be used to combat ignorance, superstition, and tyranny and to build a better world & enlightened existence.





The Age of Enlightenment 18th Century

- The Enlightenment, a philosophical movement beginning in France that advocated Reason and logic as the basis of authority and all decisions and using reason and logic to solve social problems
- A period of <u>intellectual exchange</u> in Europe during the 18th century that spread to North America and beyond. It was mostly an upper class (aristocratic) phenomena.
- Rising literacy and an explosion of printed material allowed for rapid transmission of ideas and thought.
- Represented desire for <u>political</u> and <u>social</u> change
- Many of the United States' <u>Founding Fathers</u> were heavily influenced by Enlightenment-era ideas: (1600s-1800s)
 - particularly in the religious sphere (separation of church and state)
 - And in the political sphere (a major influence on the **U.S.** Bill of Rights



The Age of Enlightenment

- Heavily influenced by the <u>Scientific Revolution</u> in Europe during the 1600s
 - Scientific Revolution: the time period where scientists in Europe began to observe, hypothesize, and experiment to reach conclusions about the natural world
 - Challenged prevailing religious beliefs and the Catholic Church's authority on all things relating to the natural world: developed the Scientific Method
- Applied the <u>methodology of science</u> to human problems in an attempt to engineer a better existence for mankind
- Reason was the guiding principle!





Major Enlightenment Ideas

- Every social, political and economic problem could be solved through the use of reason
- Governments are created to secure an orderly society
- Separation of powers is the best way to protect human liberties
- All <u>men</u> are created "free and equal"
- A free market should be allowed to regulate trade

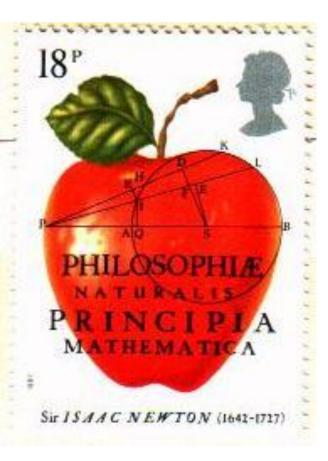




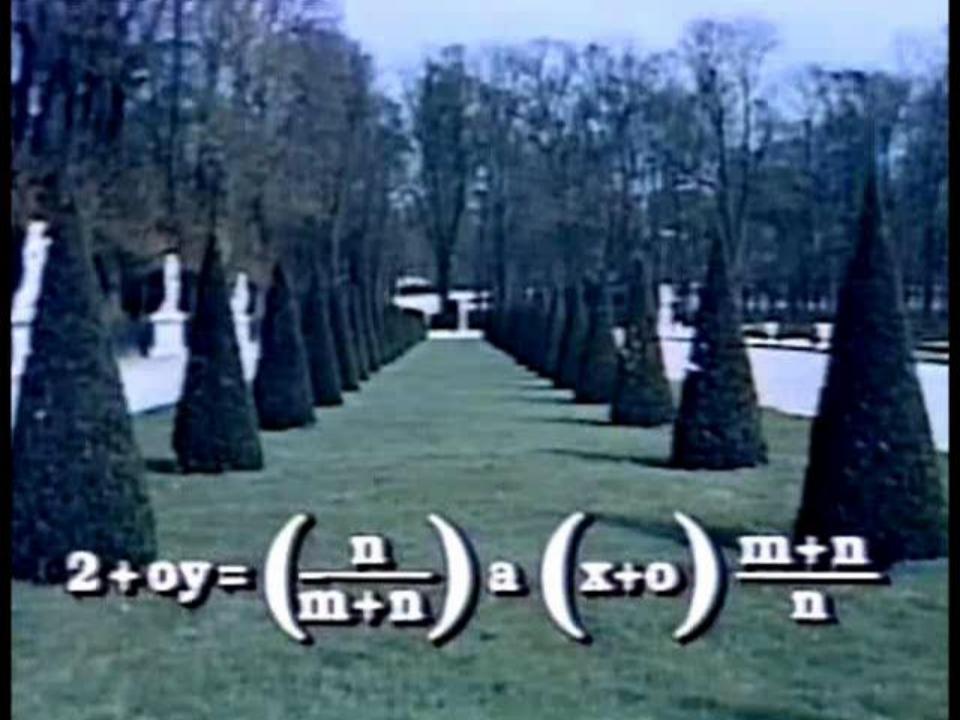
The Philosophes

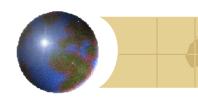
- Were Western European intellectuals (mostly French)
- met in Salons, cafes or private homes of aristocracy
- Philosophes were Intellectuals who discussed ideas
 - Enlightenment philosophers who met to discuss reason, logic, rationale, and how to solve social problems
- Used reason to explain their world
 - believed in using the scientific method to solve social problems & engineer a better world
- were against <u>Divine Right</u> and believed the people are the source of government's power!
- Believed in tolerance for all religions!





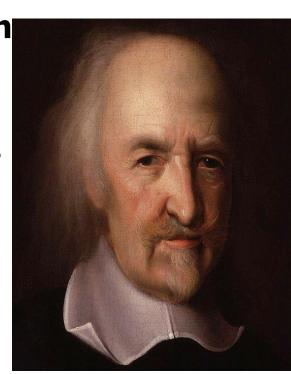
- Interested in addressing a broad audience
- Committed to reform of human systems, society and even knowledge itself
- Celebrated the scientific revolution and used the scientific method to reveal the workings of man
- The "Mystique of Newton"—Sir Isaac Newton was a powerful symbol of Enlightenment Intellectualism in the realm of science.
- Science applied to engineering a better world and a more <u>meaningful</u> existence!





Thomas Hobbes (1588-1679)

- English political philosopher who advocated for the enlightened monarch but also championed individual liberties.
- Wrote the book "Leviathan" in 1651 as a reaction to English Civil War.
- First to articulate the concept of the social contract between government and governed.
- Believed humans are naturally wicked and need strong controls to curb excessive emotionalism and irrationality.





Hobbes and the Social Contract

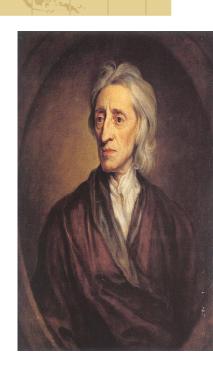
- Hobbes believed in (1) the right of the individual; (2) the natural equality of all men leads to conflict in a competitive society dominated by capitalism (3) man is bad and needs to be controlled in a social contract that organizes and monitors social behavior, controlling the people so that everyone can enjoy as much as they can out of life.
- A strong monarch is required to rule in the interests of all, to control and regulate where people cannot in order that everybody enjoy their liberty without interfering with others.
- A social contract, an association of individuals bound together by mutual need and obligation under the law for protection is necessary. Human state of nature is competitive and brutal.





John Locke (1632-1704)

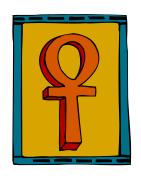
- British Philosopher
- Believed people are born with minds as a blank slate (Tabula Rasa) to be filled up: not naturally good or bad
- Believed it was human nature to want to figure things out and to want to make sense of the world
- Disagreed with <u>Hobbes</u> that people are naturally wicked
- Believed humans were reasonable creatures capable of figuring out anything
- Influenced Thomas Jefferson in Declaration of Independence
- Believed all people were born with 3 <u>natural</u> rights (<u>Life, Liberty, Property</u>)





Locke's 3 Natural Rights

Locke believed all people born with 3 Natural Rights: <u>Life, Liberty, and Property</u>







- Locke's Natural Rights heavily influenced America's founders
- Natural Rights included in US Declaration of Independent (<u>Life, Liberty, and Pursuit of Happiness</u>)



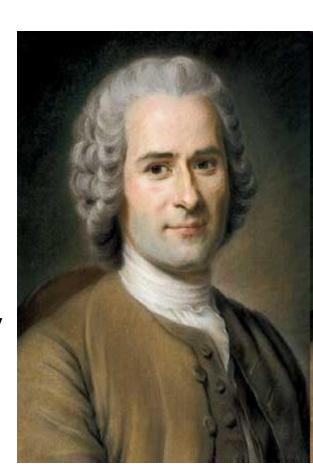


LOCKE HOBBES Humans are naturally cruel, greedy •Humans are naturally reasonable, and selfish. moral and good To escape this "brutish" life people •Humans have natural rights: life entered into a social contract. liberty and property Only a powerful government could People form governments to protect ensure an orderly society. natural rights Best government was one with Believed only an absolute monarchy limited power could keep a society completely •If a government violates people's orderly. natural rights, people have the right No right to overthrow the to overthrow government government! Government is limited and The King should be an enlightened accountable to the people; it is the absolutist, but even if he is not, there people who have sovereignty! is no better basis for the social contract according to Hobbes!



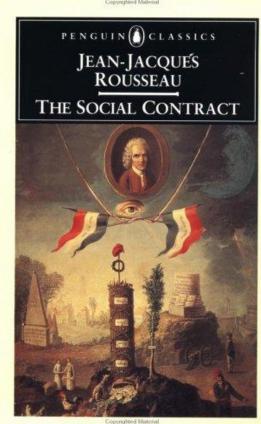
Jean-Jacques Rousseau (1712-1778)

- Swiss born philosopher
- Wrote "<u>The Social Contract</u> "(1762)
- Believed humans were naturally good and corrupted by society, not the other way around (as <u>Hobbes</u> believed)
- Believed society forces people to compete bringing out the worst in people
- Believed government forces people to distrust each other and takes freedoms away
- Believed modern technology made people too dependent on one another
- Believed dependency created inequality, social classes, division
- The "General Will" of the people should prevail!



Jean-Jacques Rousseau (1712-1778) The Social Contract

- Under the social contract government's job was to help people be happy and needs cared for
- Believed that the people are the source of government powers
- Believed if government did not do its job people had the right to remove leaders and create a new government





Hobbes' & Rousseau's Social Contracts

Hobbes

- People are naturally wicked
- People need to surrender their independence to an absolute leader in exchange for law and order
- People do not have the right to rebel

<u>Rousseau</u>

- People start out good and become corrupted by society
- People are the source of government's power
- Government needs to help people
- People can rebel if leaders fail to do their job







Voltaire (1694-1778)

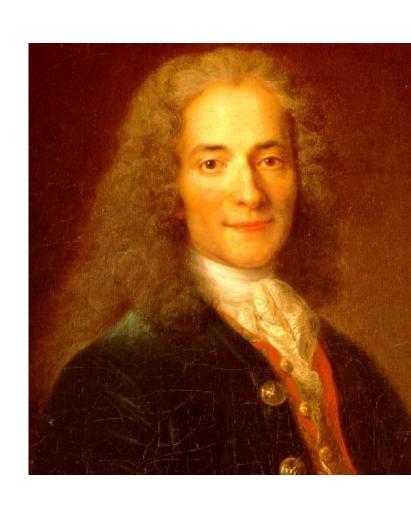
- Known for his wit and nonconformity
- Opposed organized religion as too constrictive and against reason, but supported religious tolerance.
- French intellectual who criticized French society
- Staunch supporter of individual liberties



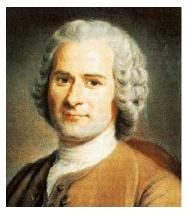


Voltaire

- Staunch supporter of right to a fair trial
- Influenced leaders of the French Revolution
- Was opposed to censorship: "I disapprove of what you say, but I will defend, to the death, your right to say it."
- Wrote the book "Candide"

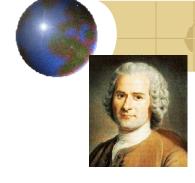


Rousseau v. Voltaire





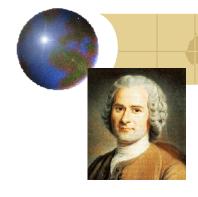
- Voltaire's chief adversary was Jean-Jacques Rousseau.
- Rousseau opposed the theater which was Voltaire's lifeblood, shunned the aristocracy which Voltaire courted, and argued for something dangerously like democratic revolution.



Rousseau v. Voltaire (2)



- Whereas Voltaire argued that equality was impossible, Rousseau argued that inequality was unnatural.
- Whereas Voltaire charmed with his wit, Rousseau always claimed to be right.
- And whereas Voltaire repeated the same handful of core Enlightenment ideas, Rousseau sparked off original thoughts in all directions: ideas about education, the family, government, the arts, and whatever else attracted his attention.
- Voltaire was a man of wit and erudition. Rousseau was a man of intellectual curiosity and achievement.



Rousseau v. Voltaire (3)



- For all their personal differences, Rousseau and Voltaire shared more values than they liked to acknowledge.
- They viewed absolute monarchy as dangerous and evil and rejected orthodox Christianity.
- Rousseau was almost as much a skeptic as Voltaire: the minimalist faith both shared was called "deism" and it was eventually to transform European religion and have powerful influences on other aspects of society as well.



Baron de Montesquieu (1689-1755)



The Spirit of the Laws (1748)
Despotism could be avoided if
political power were divided and
shared by a diversity of classes
Power must check power

Baron de Montesquieu (1689-1755)

- French political philosopher
- Believed that government's power needs to be checked (reacting to absolutism)
- Believed that there were 3 types of governments:
 - Monarchies—ruled by king/queen & guided by honor; suitable for moderately sized states.
 - Republics—ruled by elected officials and guided by virtue; susitable for small states
 - Despotisms—ruled by dictators guided by fear; suitable for large states



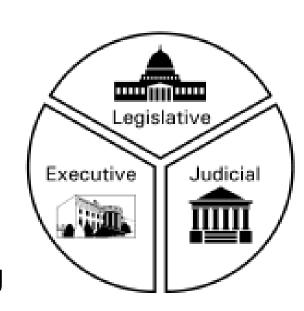
Separation of Powers

- Baron de Montesquieu: Criticized absolute monarchy and admired British government (limited monarchy)
 - British protected themselves from tyranny by dividing powers of government between three branches: legislative, executive and judicial
 - Each branch of government should be able to 'check' the other two
- What government does this sound like?



Separation of Powers

- Separation of Powers
- Believed power in government had to be divided amongst different branches
- Believed <u>checks and balances</u> are necessary to keep one branch from becoming too powerful
- Believed the people needed safeguards for their liberty from government becoming too powerful
- Heavily influenced America's founding fathers 1770's-1780's
- 3 Branches of Gov't included in US Constitution





Denis Diderot (1713-1784)

- Freelance writer dedicated to new ideas; Attempted to compile information on everything!
- Published the *Encyclopedia* in 1772, a 28 volume collection of knowledge.
- Attacked religious superstition and supported religious toleration
- Invited others to contribute to the Encyclopedia
- Knowledge is power!





The Encyclopedia

ENCYCLOPEDIE,

OU

DES SCIENCES,

DES ARTS ET DES MÉTIERS.

PAR UNE SOCIÉTÉ DE GENS DE LETTRES.

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Philosophes



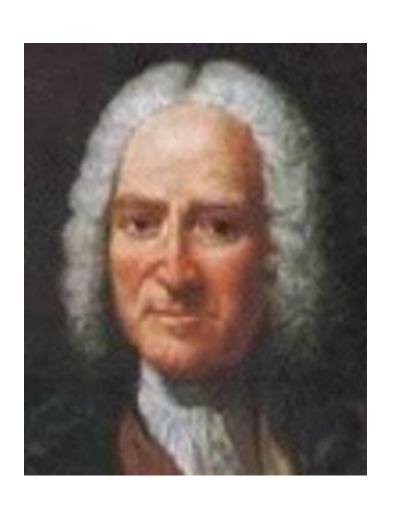






- Voltaire was joined by a band of rebellious thinkers known as the philosophes: Charles de Montesquieu, Pierre Bayle, Jean d'Alembert, and many lesser lights.
- Because Denis Diderot commissioned many of them to write for his influential Encyclopedia, they are also known as "the Encyclopedists."
- Diderot challenged the contemporary authorities in the church and created another resource for knowledge outside the purview of the church.

Baron Paul d'Holbach (1723-1789)



- Deterministic view of human beings
- Free will, God and immortality of the soul are foolish myths
- His views dealt the unity of the Enlightenment a severe blow
- Other thinkers repelled by this inflexible atheism

Enlightenment in England

- Great Britain developed its own Enlightenment, fostered by thinkers like John Locke and David Hume.
 - England had deposed and decapitated its king in the 17th century. Although the monarchy had eventually been restored, this experience created a certain openness toward change.
 - English Protestantism struggled to express itself in ways that widened the limits of freedom of speech and press. Radical Quakers and Unitarians challenged old dogmas.



David Hume (1711-1776)



- Human mind is nothing but a bundle of impressions
- Reason cannot decipher anything about the origins of the universe or the existence of God
- Hume's rationalistic inquiry results in undermining the Enlightenment confidence in reason itself
- Questioned the ability of man to know everything



Enlightenment and the Economy

- Physiocrats rejected mercantilism in favor of a policy called laissez faire.
 - Physiocrats were Enlightenment thinkers who focused on economic reforms
- Laissez-Faire: allowing business to operate with little or no government interference
 - Real wealth comes from productive land not gold and silver
 - Supported free trade and opposed tariffs
 - Individuals make decisions for themselves would regulate the market



Adam Smith (1723-1790)

- First modern economist
- The Wealth of Nations (1776)
- "Invisible Hand" of self interest regulates the market
- Laissez-Faire— leave well enough alone; no government interference in the marketplace.
- Smith said there are only 3 roles for government in society: (1) national defense, (2) law enforcement (3) public infrastructure







The Wealth of Nations

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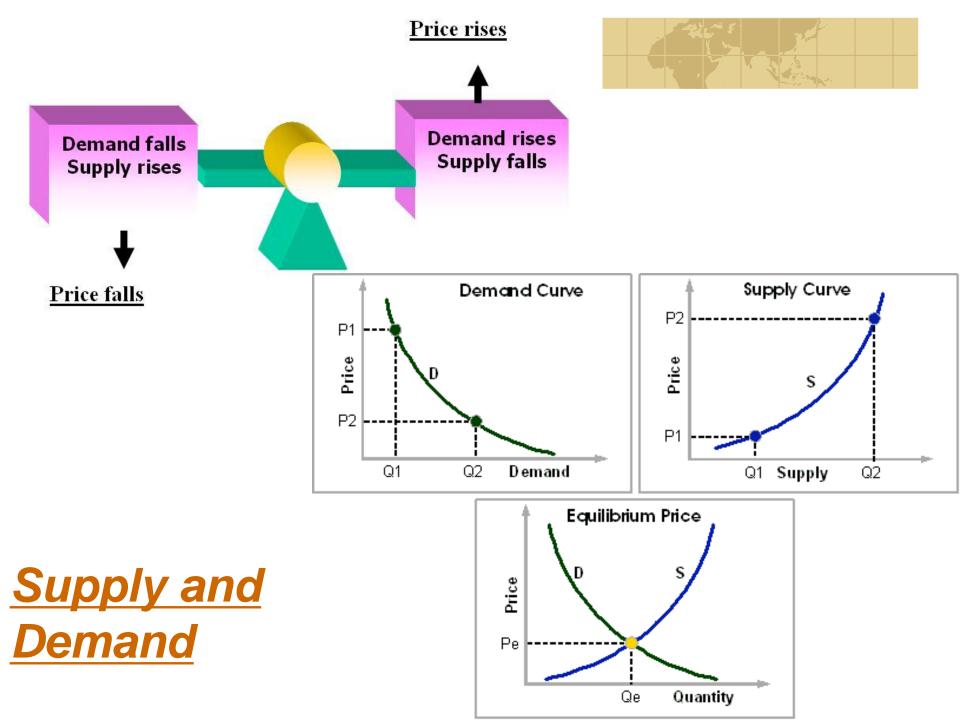
LONDON

PRINTED FOR M. STRAIGHT, AND T. CARPLE, IN COLUMNAL OF MICHAELS.



Adam Smith: Free market should be allowed to regulate business activity

- Manufacturing, trade, wages, profits and economic growth are all linked to the market forces of supply and demand
- Where there is demand, suppliers will seek to meet it because there are profits and economic rewards to be had
- Smith supported laissez faire, but also believed that a government had a duty to protect society, administer justice, and provide public works.
- His ideas led to very productive economies during the Industrial Revolution (1800's and 1900's)



Mary Wollstonecraft (1759-1797)

- Many male philosophes argued that women were inherently inferior to men.
- English writer Mary Wollstonecraft wrote "A Vindication of the Rights of Women" to refute this.
- Wollstonecraft said that (1) enlightenment celebrates reason in men and women and (2) arbitrary power of men over women was wrong
- Founder of modern feminism





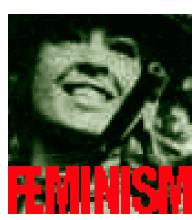
Wollstonecraft

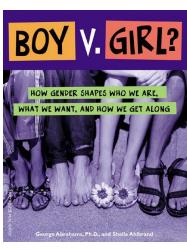
- Argued that men and women should be treated as equal beings
- Argued that social order should be determined by reason (usefulness) not by gender, race, wealth, etc.
- Argued that society trains women to be weak and more concerned with their superficial looks than contributions to society
- Argued that women should receive the same type and quality of education as men



Wollstonecraft=First Feminist!

- Argued that proper education for women will solve their problems
- Argued women must be given the opportunity to participate in the public sphere as much as the private sphere
- She was a feminist long before it was acceptable
- She inspired numerous later generations of feminists in numerous countries
- Most Enlightenment Philosophes did not agree with her about the roles of women and education for women; female inferiority was an accepted idea. Wollstonecraft was ahead of her time!







Cesare Beccaria (1738-1794)

- Explored issues of crime and punishment with the goal toward improving society through just correction of criminals.
- Wrote essay "On Crimes and Punishments" (1764)
 - Opposed excessive punishment
 - Opposed brutality in punishment
 - Opposed capital punishment (death)
 - Believed punishment should deter and teach, not humiliate or treat people barbarically

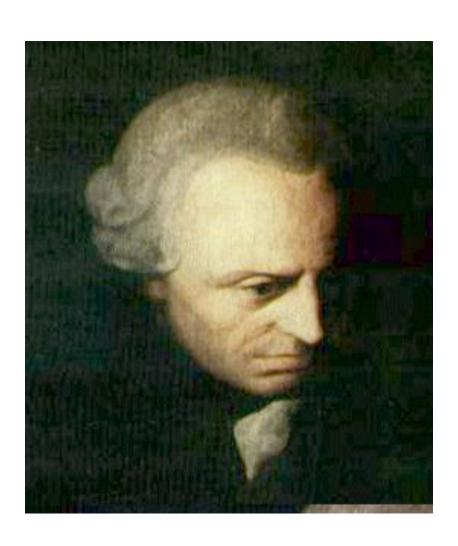


Enlightened Despotism



- The manner of political reform
- Frederick the Great of Prussia
- Peter the Great of Russia
- Catherine the Great of Russia
- Joseph II of Austria
- True reform or a cynical, manipulative consolidation of power?

Immanuel Kant (1724-1804)



- One of few philosophes to live to see the French Revolution
- Enlightenment was a personal process—release from immaturity
- More optimistic than Rousseau
- Dare to Know"— Enlightenment was an act of personal courage

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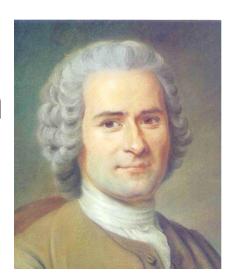
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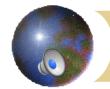
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Major Enlightenment Ideas for Society

- Detested the slave trade and slavery
- Deplored religious prejudice
- Defended freedom of speech
- Attacked divine right theory
- Urged education for all
- Hated unequal distribution of property
- Believed governments should be freely elected
- Women's first duty was to her family





Enlightenment Changes Society



- Women: Women were not equal and were criticized for attempting to gain equality
- Salons: Men and women gather in living rooms to discuss Enlightenment ideas (chat rooms)
- Music: Ballets and operas become popular (Bach, Handel, Mozart)
- Art: Baroque gives way to rococo art (simple, elegant and charming)
- Literature: Novels become popular as literacy and income rises!



Conclusion

- The Enlightenment was a period of intellectual exchange in Europe during the 18th century
- Several factors contributed to the Enlightenment—absolutism, increase in literacy, use of reason and the Scientific Revolution in problem solving.
- Philosophes expressed desire for social and political change to engineer a better world
- The World of the Enlightenment is the Modern World!

Heritage of the Enlightenment

- Today the Enlightenment is often viewed as a historical anomaly – a brief moment when a number of thinkers infatuated with reason vainly supposed that the perfect society could be built on common sense and tolerance, a fantasy which collapsed amid the Terror of the French Revolution and the triumphal sweep of Romanticism.
- The ideas of the Enlightenment are commonplace today, accepted truths for our time and the bedrock upon which our secular society rests.

